associate professor of agricultural engineering. Mr. F. C. Gates, who recently finished the work for his doctorate at the University of Michigan, is instructor in botany. Mr. Edgar M. Ledyard, who spent the past year at the University of Michigan where he put the entomological collection in order and left some sixty thousand Philippine insects, has returned to his work as assistant professor in entomology. Dr. H. N. Whitford has resigned as associate professor of forest botany and silviculture, and has returned to the United States.

DISCUSSION AND CORRESPONDENCE

THE VOTE ON THE PRIORITY RULE

To the Editor of Science: A brief rejoinder may be permitted to the report by Messrs. Nutting, Williston and Ward in Science for December 13, on a vote on the rule of Priority in Nomenclature.

Primarily this vote shows something quite different from what might be inferred from a superficial examination of the report.

It means *not* that the voters have studied the conditions of confusion which the priority rule was instituted to clear up, and which produce the present temporary state of which there has been natural complaint; but that the teachers (of whom the list of voters is exclusively composed) are much annoyed by the uncertainty incident to the period of transition. This is nothing new; everybody has felt it; it requires an almost Roman firmness to give up a familiar if erroneous name; and the wonder is that the vote was not unanimous. Precisely the same state of mind is the cause why we have not yet adopted the metric system, and Russia retains the old style in her calendar.

If the question had been put as to what remedy should be had, other than continuing the work of rectification as rapidly as possible, it is likely there would have been as many minds as there were voters. No teacher likes to give a name to an organism before his classes which he is not certain is up to date. Moreover, some too clever pupil may discover that Jordan, Merriam, Allen, Elliot, Gill, Richmond, and other master systematists reject that name; where then is our infallibility? It is a tearful situation.

However, a complete remedy is at hand which will harmonize all the disputants without sacrificing accuracy or rejecting necessary rules.

It is well known that nearly all the vertebrates have what are called "common" or popular names. These have been carefully preserved by the ornithologists in their check-lists, for example.

Now let the dear old familiar names of each man's particular set of text-books be given the status of "common names," distinguished by (say a plus sign before them) to avoid confounding them with the real names, and have it generally admitted that no odium attaches to the use of a "common name" for our invertebrates, any more than in ornithology, and we have the whole problem solved. Since only one in a million invertebrates has a "common name" at present, no trouble would ensue on that score.

(I expect nothing less than a statue for this discovery, from future generations of teachers.)

Wm. H. Dall

Smithsonian Institution,
December 16, 1912

THE STAINING OF PROTOZOA

To the Editor of Science: Hæmatoxylin is, so to speak, the printer's ink of protozoologists, for this stain is used by all workers in studying the morphology of the cell, and it has come into general use because it tells as much as a single stain can of the essential structures in the architecture of a cell. It is true that various mordants alter, or rather intensify the staining character of certain parts of the nucleus. For example, when "agamous" trophozoites of *Entamœba tetragena* are stained by alum hæmatoxylin, iron hæmatoxylin, or phosphotungstic acid hæmatoxylin, or if they are stained with Mallory's phosphotungstic acid hæmatoxylin after wet fixation by Merkel's and Zenker's fluids, the different structures in the nucleus—

centriole, karyosome and sub-membranous granules, take the stain in different degrees, yet it is the same chemical basophilic substance that becomes stained.

Hæmatoxylin tells us nothing about the acidophilic substance which seems to play an important part in the physiology of the nucleus.

During the past year, working with *Entamœba tetragena,* I have been impressed by the lack of information in literature on the subject of the acidophilic substance in the nucleus of protozoa; and in descriptions of protozoa, I have noticed the frequency with which acidophilic substance has been confused with true chromatin (basichromatin). This appears to be due to the use of polychrome stains which have not been thoroughly differentiated, and to the absence of a satisfactory technique for demonstrating acidophilic substance in wet fixed films.

Those who have used the Romonowsky modifications have usually been content with over-toned or blurred pictures. In attempting to identify *"E. histolytica"* in this region and differentiate it from *E. tetragena,* our common pathogenic entamœba, I have used Romonowsky stains on films which have been so differentiated that excessive amounts of the stain have been washed out as one would differentiate preparations stained with hæmatoxylin. Inasmuch as Romonowsky stains have almost as much tendency to overstain as hæmatoxylin, the necessity for extraction of superfluous stain is manifest.

I have usually selected cover-slip preparations that contained a sufficient number of entamœbæ to warrant further study, and stained both cover-slip and object slide, thereby obtaining three pictures from one film, fresh, hæmatoxylin and polychrome. After staining, the excess of polychrome stain has been removed by means of 95 per cent. ethyl alcohol and ammoniated 60 per cent. alcohol, and I have found that when properly differentiated, the polychrome stain after dry fixation gives a picture entirely different from that of hæmatoxylin after wet fixation. It is different in two respects. It not only shows that there is an acidophilic substance—oxychromatin—within the nucleus quite different from anything yet described for *E. tetragena,* but the remainder and larger portion of the nucleus has a different structure and staining characters from that described from hæmatoxylin preparations of this entamœba.

The nucleus of *E. tetragena,* when stained with Hasting's stain followed by Giemsa's stain, and carefully differentiated with 60 per cent. ethyl alcohol, to which a few drops of aqua ammoniæ have been added (1 per cent. aqua ammoniæ in 60 per cent. alcohol) is seen to be made up of a clearly defined red substance which takes the form of a ring about the size of the karyosome or smaller. Oftener, it takes the form of a delicate reticulum or of discrete granules lying within the nuclear membrane. This red substance does not correspond in location with true chromatin (basichromatin) which stains with hæmatoxylin, and it should not be confused with basichromatin as some writers have done. The red substance, or oxychromatin, is imbedded in an ill-defined nuclear structure, staining faintly blue which sometimes is made up of slightly refractile achromatic granules of uniform size, imbedded in faintly staining blue substance and surrounded by an achromatic or faintly staining blue ring, corresponding with the nuclear membrane. The cytoplasm stains various shades of blue.

Attention is drawn to this subject with the suggestion that those interested in the cytology of protozoa pay more attention to the acidophilic substance of the nucleus—oxychromatin, for the purpose of learning what part it plays in relation to synchronous changes in the basichromatin of the nucleus and in the physiology of the cell.

It is extremely likely that so clearly defined a substance as the oxychromatin of the nucleus of *E. tetragena* is has an important physiological function, and it would seem that other protozoa might yield interesting and no doubt important information if studied from preparations designed to satisfactorily show basophilic and acidophilic nuclear substance.

SAMUEL T. DARLING